

URBAN AREAS

Introduction

Pollution from urban areas is the most complex and difficult kind to control. This category, a combination of day-to-day workings of urban and rural activities, is divided into the four sub-categories for ease of evaluation:

1. Construction and Development (Stormwater Runoff)
2. On-Site Sewage Systems
3. Pollution Prevention - contains sub-categories.
4. Land Transportation Systems

Each category will include a general description of the problems and programs as they exist in Washington, followed by an analysis of existing management measures.

Construction and Development (STORMWATER RUNOFF)

BACKGROUND

Natural vegetative cover once protected much of Washington's land by intercepting rainfall, reducing erosion, and recharging ground water. The trees and shrubs held much of the moisture, and the forest duff layer absorbed runoff, releasing it slowly and steadily to the streams.

Clearing for buildings, parking lots, and landscaped areas is now occurring at a rapid rate in Washington. Drainage patterns are forever changed. Rainfall runs quickly and directly into the streams, dramatically increasing their volume and peak flows.

When discharged through a pipe, stormwater is considered a point source of pollution. Historically, stormwater management has meant controlling water quantity, usually flood control of large storm events. In Washington State, EPA has delegated NPDES permitting and enforcement authority to Ecology. Ecology has jurisdiction over all industrial and municipal stormwater discharges within Washington, except discharges on federal and tribal lands.

It is now seen as important to manage the stormwater runoff from small storms as well, not only for the sake of flood control, but also for protection of water quality. It takes just a small amount of stormwater runoff to carry large amounts of soil and pollutants.

Stormwater quality tends to be extremely variable (USEPA 1983). The intensity of rainfall fluctuates dramatically, affecting runoff rate, pollutant washoff rate, in-channel flow rate, pollutant transport, sediment deposition and re-suspension, channel scour, and numerous other phenomena. As a result, pollutant concentrations and other stormwater characteristics at a given location should be expected to vary significantly during a single storm runoff event and from event to event. In addition, the transitory and unpredictable nature of many pollutant sources and release mechanisms (spills, leaks, dumping, construction, landscape, irrigation runoff, vehicle washing, etc.) and differences in the time interval between storm events also contribute to inter-storm variability (Woodward-Clyde, 1995).

Another problem with stormwater control is infiltration and inflow (I&I) in sewer systems. As improvements are made to the sewer systems to eliminate stormwater I&I, the stormwater is typically diverted to surface waters, often without any treatment. Stormwater I&I contributes to combined sewer overflows (CSOs) which pose a serious public health threat, particularly in shellfish growing areas.

One of the major problems currently facing Washington is the high growth rate experienced over the past decade. During the 1990's, about 130,000 people have moved to the state each year. Most of this growth originally centered in the urban districts

associated with metropolitan Puget Sound and Portland, Oregon. More recently, growth has spread throughout the state, with rates ranging from 0.3 percent annual growth in the rural southeastern part of the state to 5 percent annual growth in Clark County, across the Columbia River from Portland. The growth rate in Clark County is more than double the statewide rate of 2.3 percent.

During this period, local governments and citizens have focused much effort on maintaining the quality of life in their communities. For example, in 1991, only 14 of the state's 39 counties were fully planning under the GMA. By 1998, 29 counties, or almost twice that number, are fully planning, utilizing comprehensive plans and development regulations. These 29 counties hold more than 95 percent of the State's population. All 10 of the counties not fully planning under the act have growth rates lower than the State average and plan under the Washington State Planning Enabling Act (RCW 36.70).

SOURCE CONTROL STRATEGY FOR CONSTRUCTION AND DEVELOPMENT

Stormwater management is primarily related to land use. The regulation of land use is governed by:

- the State Environmental Policy Act (Chapter 43.21C RCW) with its related regulations in Chapter 197-11 WAC
- the Growth Management Act (Chapter 36.70A RCW)
- the Shoreline Management Act (Chapter 90.58 RCW) and its related guidelines in Chapter 173-26 WAC.

The relationship between these acts is discussed in Chapter three.

In addition, as with previous categories, if a discharge to the State's waters occurs as a result of activities in this subcategory, Ecology can take enforcement action under the Water Pollution Control Act (Chapter 90.48 RCW).

All construction, municipal and industrial areas greater than five acres must follow the requirements of the Construction General Permit when developing land. For stormwater, the requirements and Best Management Practices are established in the 1992 stormwater manual. This manual has been used statewide for the past seven years in reviewing stormwater plans.

Best Management Practices for all construction and development in the state will be established through the new statewide stormwater manual: "Stormwater Management in Washington State." The manual is currently under public review. All construction and development sites are required to prepare a plan demonstrating how the minimum requirements of the manual will be met. For projects with sites greater than one acre, or which will have more than 5000 square feet of impervious surface after the project is

finished, Ecology reviews the plan. For smaller projects, review of the plan is left to local governments. Ecology encourages local governments to verify compliance with the stormwater requirements in conjunction with the inspection that results in the Permit to Occupy. BMP implementation is also required in all municipal and construction general permits as well as individual industrial permits.

SEPA Checklist elements pertaining to these management measures

Impacts to water and land must be considered under the State Environmental Policy Act. The SEPA checklist provisions found in Part B: Environmental Elements address all or part of the requirements found in a number of the Urban management measures.

1. Earth

- a. General description of the site (circle one): Flat, rolling, hilly, steep slopes or mountains. Other:
- b. What is the steepest slope on the site (approximate percent slope)?
- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck?) If you know the classification of agricultural soils, specify them and note any prime farmland.
- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe:
- e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.
- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.
- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?
- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

2. Water

- a. Surface
 1. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.
 2. Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.
 3. Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. In the source of the fill material.

4. Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.
 5. Does the proposal lie within the 100 year floodplain? If so, note location on the site plan.
 6. Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.
- b. Ground:
1. Will ground water be withdrawn, or will water be discharged to groundwater? Give general description, purpose, and approximate quantities, if known.
 2. Describe waste materials that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial, containing the following chemicals; agricultural; etc.). Describe the general size of the system, the number such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.
- c. Water Runoff (including storm water)
1. Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe
 2. Could waste material enter ground or surface waters? If so, generally describe.
- d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

3. Shoreline and Land Use

- a. What is the current use of the site and adjacent properties?
- b. Has the site been used for agriculture? If so, describe:
- c. Describe any structures on the site.
- d. Will any structures be demolished? If so, what?

- e. What is the current zoning classification of the site?
- f. What is the current comprehensive plan designation of the site?
- g. If applicable, what is the current shoreline master program designation for the site?
- h. Has any part of the site been classified as an “environmentally sensitive” area? If so, describe.
- i. Approximately how many people would reside or work in the completed project?
- j. Approximately how many people would the completed project displace?
- k. Proposed measures to avoid or reduce displacement impacts, if any:
- l. Proposed measures to ensure the proposal is compatible with existing and projected land use and plans, if any.

NONPOINT POLLUTION ASSOCIATED WITH STORMWATER RUNOFF

Runoff may contain high concentrations of heavy metals, fecal contamination bacteria, silt, petroleum products, and nutrients. In the short term, these toxic pollutants can stress aquatic organisms, damage shellfish beds, and restrict water recreation. In the long term, accumulation of pollutants in receiving waters can create irreversible problems such as eutrophication of lakes, groundwater contamination, and contaminated sediments.

In addition to carrying pollutants, runoff can cause streambed scouring and erosion contributing to water quality degradation. Impermeable surfaces, such as roofs, parking lots, and paved streets, prevent rainfall from infiltrating the soil, creating sudden rushes of water in receiving streams during a storm.

Although stormwater is generally discharged to surface waters, an alternative is to discharge stormwater to underground wells. Approximately 18,000 dry wells and similar infiltration devices are used to dispose of stormwater in Washington. However, such discharges can contaminate public or private water wells.

Numerous studies conducted during the late 1970s and 1980s showed that stormwater runoff from urban and industrial areas is a potentially significant source of pollution (USEPA, 1983). A recent paper, by May et al, titled "Effects of Urbanization on Small Streams in The Puget Sound Lowland Ecoregion," 1997, demonstrated that:

Stream impairment begins at five to ten percent total impervious area in the watershed. Urbanization brings an increase in impervious land cover

and a corresponding loss of natural vegetation. Land clearing, soil compaction, riparian corridor encroachment, and modifications to the surface water draining network all work together to increase runoff and change watershed hydrology. Riparian zones are fragmented and stripped, no longer able to provide shade, nutrients and large woody debris to the stream. Streamflow fluctuates wildly from summer to winter, and from storm to storm. Streambank erosion brings fine sediment deposition and loss of spawning and incubating habitat.

1998 FINDING AND CONDITION FROM EPA AND NOAA

Finding

Within the Puget Sound planning area, Washington's program includes management measures in conformity with the 6217(g) guidance, except for new development. Outside of the Puget Sound planning area, Washington's program does not include management measures in conformity with the 6217(g) guidance for new development, watershed protection, site development, construction site erosion and sediment control, construction site chemical control and existing development. The State has identified a backup enforceable authority for these management measures but has not yet demonstrated the ability of the authority to ensure implementation of the management measures throughout the 6217 management area.

Condition

Within three years, Washington will include in its program a management measure in conformity with the 6217(g) management measures for new development within the Puget Sound planning area. Outside of the Puget Sound planning area, Washington will, within three years, include management measures in conformity with the 6217 (g) guidance for new development, watershed protection, site development, construction site erosion and sediment control, construction site chemical control and existing development. Within one year Washington will develop a strategy (in accordance with Section XIII, page 14) to implement the management measures throughout the 6217 management area.

Rationale

Within the Puget Sound planning area, Washington's 1994 Puget Sound Water Quality Management (PSWQ) Plan includes practices to achieve all of the management measures except new development. In particular, Washington's "Nonpoint Source Rule" (WAC Chapter 400-12) and the Department of Ecology's Stormwater Management Manual for the Puget Sound Basin provide practices to implement many of the urban management measures for the Puget Sound planning area. Both the Nonpoint Source Rule and the Stormwater Manual were developed pursuant to the PSWQ plan. However, neither the Nonpoint Source Rule nor the Stormwater Manual assures a reduction in Total Suspended Solids from post-development levels as provided for in the new development management measure.

Although the following authorities that Washington proposes for outside the Puget Sound planning area do provide for the development of local laws and programs that address aspects of these management measures, they do not provide a uniformly consistent fabric that incorporates all aspects of these management measures throughout the entire 6217 management area.

Outside of the Puget Sound planning area, Washington proposes to implement the 6217(g) urban management measures through: the establishment of Shellfish Protection Districts, the Growth Management Act (Ch. 36.70A RCW), the Shoreline Management Act (Ch. 90.58 RCW), the State Environmental Policy Act (Ch. 43.21c RCW) and the Model Toxics Control Act (Ch. 70.105D RCW). However, there is no link between these programs and the management measures to require the implementation of these measures.

Shellfish Protection Districts could provide a vehicle to implement the management measures in designated areas. However, the information provided in the program submission was not sufficient to determine if the management measures will be used in the Districts' decision making process. In addition, Shellfish Protection Districts are voluntary and only apply to limited geographical areas within the 6217 management area.

Under the Growth Management Act (GMA), selected local governments must adopt a comprehensive land use plan and develop regulations that incorporate the goals of the plan. The GMA provides general guidance that encourages local governments to adopt goals and policies for promoting infiltration of storm water, wetland conservation and protection, preservation of natural drainage courses including fish and wildlife habitat and the integration of storm water management into all ordinances affecting water quality. The GMA, however, does not provide specific standards and criteria or development regulations for site controls. Where local governments do not adequately develop comprehensive plans or development regulations, the State lacks authority to develop and implement such plans and regulations and relies only on financial disincentives through the authority to withhold tax revenues from local governments.

The Shoreline Management Act applies to those lands extending landward within 200 feet of the shorelines of the state, which includes all marine water, all lakes twenty acres and larger, all streams and rivers with a mean annual flow of more than twenty cubic feet per second and associated wetlands. As part of the effort to integrate shoreline management with growth management, as directed by the 1995 legislature in ESHB 1724, the Department of Ecology is amending procedures for implementing the Shoreline Management Act. Until the rule making is completed, the ability of the Shoreline and Growth Management Acts to implement the management measures is unknown.

The State Environmental Policy Act (SEPA) requires state and local governments to consider environmental impacts in their decision making process, including impacts from permitting site development and construction practices. SEPA provides the authority to

government agencies to deny, condition or require mitigation under development or construction permits. Conceptually, the 17 management measures could be used as one basis for SEPA decisions. However, it is impossible with the information provided to determine or ensure that state and local agencies are required to implement these management measures through the SEPA review process.

The Model Toxics Control Act only addresses proper storage and disposal of toxic materials. It does not provide for procedures to address general housekeeping of construction materials and nutrients on construction sites.

The State has identified the State Water Pollution Control Act (Ch. 90.48 RCW) as a backup enforceable policy but has not described how the Act will be used to ensure implementation of the management measures.

EFFORTS TO IMPROVE CONSTRUCTION AND DEVELOPMENT PROGRAMS IN WASHINGTON

These management measures apply to construction and development:

1. New Development
2. Watershed Protection
3. Site Development
4. Construction Site Erosion and Sediment Control
5. Construction Site Chemical Control
6. Existing Development

The guidelines for implementing the Shoreline Management Act are being updated and will be adopted into rule by the summer of 2000. This is the first update of the guidelines since the passage of the act in 1973. Many of the management measures are now included within those guidelines. Local governments will be updating their Shoreline Master Programs over the next few years to comply with the new guidelines.

Management Measure Number IIA: **New Development**

Description from Federal Guidance:

- (1) Through design or performance:
 - (a) After construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solid (TSS) loadings by 80 percent. For the purposes of this measure, an 80 percent TSS reduction is to be determined on an average annual basis, or
 - (b) Reduce the post-development loadings of TSS so that the average annual TSS loadings are no greater than predevelopment loadings, and
- (2) To the extent practicable, maintain post-development peak runoff rate and average volume at levels that are similar to predevelopment levels.

Sound watershed management requires that both structural and nonstructural measures be employed to mitigate the adverse impacts of storm water. Nonstructural Management Measures II.B and II.C can be effectively used in conjunction with Management Measure II.A to reduce both the short- and long-term costs of meeting the treatment goals of this management measure.

Calculations for TSS loading in (1) are based on the average annual TSS loadings from all storms less than or equal to the 2-year/24-hour storm. TSS loadings from storms greater than the 2-year/24-hour storm are not expected to be included in the calculation of the average annual TSS loadings.

1998 Finding from EPA and NOAA

Due to the complexity of the Construction and Development management measures, please see Urban Stormwater introductory section for complete set of findings.

Existing Statute(s) and Regulations

Water Pollution Control Act (Chapter 90.48 RCW)
 “Stormwater Management in Washington State”
State Environmental Policy Act (Chapter 43.21A RCW)
 Chapter 197-11 WAC
Community and Urban Forestry (Chapter 76.15 RCW)

Description of Current Programs in Washington

Currently, the Best Management Practices in the 1992 stormwater manual are required in the State's Construction General Permit. Generally, in urban areas, a sediment retention facility is constructed as part of the development to allow slow release of the waters to the municipal stormwater system and/or to groundwater, as required by the Construction General Permit. These retention facilities allow for the settling of sediment and other suspended solids.

In addition, local governments may use SEPA to require site-specific mitigation measures to limit sediment release both during and after construction. Several sections of the SEPA checklist are geared to investigate erosion potential for new development. The requirements of this management measure are addressed through parts B1 Environmental Elements (Earth) of the SEPA Checklist found in the preceding Urban category introduction. Permits can be denied if an appropriate sediment management plan is not part of the proposal.

Sediment reduction can also be accomplished by stormwater reduction. For example, the City of Lacey requires new developments to retain as much stormwater as possible on site. Lacey has also constructed stormwater treatment facilities to remove sediment and associated pollutants before the runoff enters receiving waters.

The discharge prohibition in RCW 90.48.080 provides a back up authority if sediment is released to the state's water. If such a release occurs, Ecology can initiate an enforcement action including notices, fines and penalties, as noted in Chapter 3.

Recent research at the University of Washington has found that certain types of landscaping can reduce stormwater volume and sediment delivery to water. Wetlands and forested areas can absorb much more water and pollutants than lawns, exposed soil, or impervious surfaces. Thus, one method to implement this management measure would be to encourage the growth of the urban forest and preservation of wetlands.

Most Washington cities have ordinances which require natural landscaping in new developments. Market forces also encourage landscaping prior to sale, lease, or use. Depending on the location of the development within the state, natural landscaping may include the planting of various trees.

DNR maintains an Urban and Community Forestry program. This program:

- provides grants to cities and counties for urban forest restoration projects
- provides technical assistance to cities in urban forest preservation
- coordinates other urban forestry programs, such as TREE CITY, USA within the state.

WSU Cooperative Extension provides a wide range of educational programs for urban and suburban residents, all based on best management practices. These range from:

- Master Gardener responses to homeowner pesticide questions
- Education programs targeting nursery staff
- Watershed Steward volunteer training programs
- Home*A*Syst drinking water protection program
- “With a Water View” realtors education program

Additional needs to meet the management measure

The revision of the 1992 stormwater manual needs to be completed with appropriate BMPs to implement this management measure.

Actions to meet the management measure

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development.

Additional Actions to improve water quality

- Identify and participate in a zero impact stormwater demonstration project (Urb 8)
- Expand the Urban and Community Forestry program to meet current requests for assistance from local governments, and perform adequate outreach. (Urb 9)
- Develop incentives for cities to participate in the TREE CITY, USA and other national programs encouraging urban forestry. (Urb 10)

Management Measure Number IIB: **Watershed Protection**

Description from Federal Guidance

Develop a watershed protection program to:

1. Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss;
2. Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and
3. Site development, including roads, highways, and bridges, to protect to the extent practicable the natural integrity of water bodies and natural drainage systems.

1998 Finding from EPA and NOAA

Due to the complexity of the Construction and Development management measures, please see Urban introductory section for complete set of findings.

Existing Statute(s) and Regulations

Growth Management Act (Chapter 36.70A RCW)

Salmon Restoration Act (Chapter 75.46 RCW)

State Environmental Policy Act (Chapter 43.21A RCW)

Chapter 191-11 WAC SEPA Requirements

Watershed Planning Act (Chapter 90.82 RCW)

Description of Current Programs in Washington

The Growth Management Act (GMA) requires all local governments in the state to designate and protect critical or environmentally sensitive areas within their boundaries. Critical areas include:

“the following areas and ecosystems: (a) wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas.” (RCW 36.70A.030(5))

The State Department of Community, Trade and Economic Development has prepared guidelines for local governments on the designation of critical areas. Local governments are to pass ordinances and develop regulations to protect these areas.

In addition, local governments are required to designate and develop open space areas and corridors which are to be preserved by regulation. Purchase of open space areas by local governments is also authorized in GMA.

Growth Management Act:

RCW 36.70A.170 requires all counties and cities to designate critical areas
RCW 36.70A.172 requires the use of best available science in designating and protecting critical areas
RCW 36.70A.175 requires that wetlands be designated in accordance with Ecology's manual developed under the Shoreline Management Act
RCW 36.70A.060 requires cities and counties to adopt development regulations "to assure conservation" of these lands.

Local government ordinances and efforts are reviewed by the state's Department of Community, Trade and Economic Development and adjudicated by one of the state's Growth Management Hearings Boards. Legal actions by citizens can also be brought before the boards.

There are many watershed planning efforts in the state to implement the programs discussed in the table:

Chapter 75.46 RCW requires local governments, jointly with tribes, to identify stream project in watersheds requiring restoration (section 060). As part of this effort, the Conservation Commission prepares a "limiting factors analysis" describing areas and conditions that reduce the viability of the salmon population (section 070).

Chapter 90.82 RCW allows local governments to inventory water quality (section 090) and habitat (section 100) in each WRIA. Projects to improve water quality and/or habitat are identified and prioritized as part of the planning effort (section 110).

Ecology itself has the Local Action Teams. Teams have been established in the Nooksack, Snohomish, and Yakima Basins. In addition, Ecology's water quality program continues to implement its watershed approach, scoping out issues in each WRIA every five years, and seeking solutions to identified problems.

Finally, the requirements of this management measure are addressed through parts B1, B3, and B8 Environmental Elements (Earth, Water, Shoreline and Land Use) of the SEPA Checklist found in the preceding Urban category introduction.

Additional needs to meet this management measure

None.

Actions to satisfy this management measure

Adequate programs and processes exist to implement this management measure.

Management Measure Number IIC: **Site Development**

Description from Federal Guidance

Plan, design, and develop sites to:

1. Protect areas that provide important water quality benefits and/or are particularly susceptible to erosion and sediment loss;
2. Limit increases of impervious areas, except where necessary;
3. Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and
4. Limit disturbance of natural drainage features and vegetation.

1998 Findings from EPA and NOAA

Due to the complexity of the Construction and Development management measures, please see Urban introductory section for complete set of findings.

Existing Statute(s) and Regulations

Growth Management Act (Chapter 36.70A RCW)
State Environmental Policy Act (Chapter 43.21C RCW)
Chapter 197-11 WAC
Water Pollution Control Act (Chapter 90.48 RCW)
“Stormwater Management in Washington State”

Description of Current Programs in Washington

The first component of this management measure is implemented using the Growth Management Act (RCW 36.70A.060, 170, 172, 175, as noted in the previous management measure).

In addition, the requirements of this management measure are addressed through parts B1, B3, and B8 Environmental Elements (Earth, Water, Shoreline and Land Use) of the SEPA Checklist found in the preceding Urban category introduction.

Additional needs to meet the management measure

The revision of the 1992 stormwater manual needs to be completed with appropriate BMPs to implement this management measure.

Actions to meet the management measure

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development.

Management Measure Number IIIA: **Construction Site Erosion and Sediment Control**

Description from Federal Guidance

1. Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction, and
2. Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.

1998 Findings from EPA and NOAA

Due to the complexity of the Construction and Development management measures, please see Urban introductory section for complete set of findings.

Existing Statute(s) and Regulations

Chapter 43.21C RCW State Environmental Policy Act

Chapter 197-11 WAC SEPA Rules

Chapter 90.48 RCW Water Pollution Control Act

Chapter 173-200A WAC Standards for Surface Water Quality
“Stormwater Management in Washington State”

Description of Current Programs in Washington

Education: Associated General Contractors of Washington (AGC) has created an Education Foundation which provides educational materials and training to contractors and their employees regarding BMPs for construction. The foundation has prepared a booklet on erosion control describing various methods that have proved successful in Washington. The booklet has been distributed statewide.

Enforcement: The requirements of the stormwater manual are part of the Construction General permit. Ecology inspects sites under construction for compliance with the general permit. Building sites are also inspected by cities and counties to verify compliance with the building permit. Sites which are not in compliance with their permits can be issued a "stop work" order and/or fined by local governments. Inspections may be initiated by Ecology, the city or county as a routine measure or in response to citizen complaint.

RCW 90.48.020 prohibits the discharge of any material that would alter the physical, biological or chemical characteristics of a water body. Since sediment alters the physical characteristics of water by introducing turbidity, a sediment discharge is considered a violation of RCW 90.48.020. Many local governments have enacted their own sediment

control ordinances, with penalties. Both Chapter 90.48 and local ordinances allow for civil penalties.

Additional needs to meet the management measure

The revision of the 1992 stormwater manual needs to be completed with appropriate BMPs to implement this management measure.

Actions to meet the management measure

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development.

Management Measure Number IIIB: **Construction Site Chemical Control**

Description from Federal Guidance

1. Limit application, generation, and migration of toxic substances;
2. Ensure the proper storage and disposal of toxic materials; and
3. Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface waters.

1998 Findings from EPA and NOAA

Due to the complexity of the Construction and Development management measures, please see Urban introductory section for complete set of findings.

Existing Statute(s) and Regulations

Hazardous Waste Management Act (Chapter 70.105 RCW)

Chapter 173-303 WAC

Water Pollution Control Act (Chapter 90.48 RCW)

Description of Current Programs in Washington

The Construction General Stormwater Permit, issued under RCW 90.48.160, requires that:

“All pollutants, except sediment, that occur on-site during construction shall be handled and disposed of in a manner that does not cause contamination of stormwater.”

This requirement addresses nutrients, particularly those used for landscaping, as well as toxic substances. In addition, the permit requires that chemicals, paints, oils, waste materials, and batteries be stored in impervious, bermed areas.

In addition, enforcement action can also occur through the State’s Dangerous Waste Regulations (Chapter 173-303) under the Hazardous Waste Management Act (Chapter RCW 70.105.080 - .097) for chemical releases and mismanagement. These regulations (WAC 173-303-070) divide commercial and industrial operations into three categories:

Large generators: generate more than 220 pounds of hazardous waste per month and store more than 2200 pounds on site

Medium generators: generate less than 220 pounds of hazardous waste per month and store less than 2200 pounds on site

Small generators: generate less than 220 pounds of hazardous waste per month and store less than 2200 pounds of hazardous waste on site

Large and medium generators are subject to the Dangerous Waste Regulations which require annual reports, manifesting of waste, and compliance with specific standards in the storage, transporting, treatment and disposal of hazardous waste. The standards required in the Dangerous Waste Regulations exceed the requirements of this management measure.

However, most construction sites probably are small generators as long as they limit the generation and use of toxic materials on site to the required amounts. Small generators are conditionally exempt from the Dangerous Waste Regulations. The conditions of the exemption are that the generator:

- (i) designate the hazardous waste on site;
- (ii) manage their waste in a way that does not pose a potential threat to human health or the environment [this includes certain housekeeping practices]; and
- (iii) dispose of the waste in a facility permitted to handle it.

Thus, the small generator maintains his exemption by properly storing and disposing of chemicals on site. Any chemical that enters the environment or has the potential to enter the environment, such as a spill or discharge to water, becomes dangerous waste, and the site falls under the Dangerous Waste Regulations.

In addition, some counties have developed regulations for small generators of hazardous waste under the authority that Ecology's Moderate Risk Waste Program established in RCW 70.105.220 et seq.

Additional needs to meet the management measure

The revision of the 1992 stormwater manual needs to be completed with appropriate BMPs to implement this management measure.

Actions to meet the management measure

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development.

Management Measure Number IVA: **Existing Development**

Description from Federal Guidance

Develop and implement watershed management programs to reduce runoff pollutant concentrations and volumes from existing development that:

- (1) identify priority local and/or regional watershed pollutant reduction opportunities, e.g., improvements to existing urban runoff control structures;
- (2) include a schedule for implementing appropriate controls;
- (3) limit destruction of natural conveyance systems; and
- (4) where appropriate, preserve, enhance, or establish buffers along surface water bodies and their tributaries.

Existing Statute(s) and Regulations

Salmon Recovery Act (Chapter 75.46 RCW)
Watershed Planning Act (Chapter 90.82 RCW)
Water Pollution Control Act (Chapter 90.48 RCW)
“Stormwater Management in Washington State”
Shoreline Management Act (Chapter 90.58 RCW)

1998 Finding from EPA and NOAA

Due to the complexity of the Construction and Development management measures, please see Urban introductory section for complete set of findings.

Description of Current Programs in Washington

The Watershed Planning Act requires local governments to assess the impacts to water quality and water quantity, and to develop programs and opportunities for pollution reduction. This program is solely locally driven, with local priorities. Since locals receive state grant funds, the state has approval authority over the watershed plan. Approval requires that the plan has implementation schedules and appropriate controls.

The Watershed Planning Act provides for local governments to establish a working group called a “planning unit” to assess the state of the watershed. Planning units also include representatives of tribal governments and State agencies. Under the act, watersheds are defined as the State’s 62 Water Resource Management Areas (WRIAs). In the first round, groups representing 12 WRIAs began a water quality analysis. Many areas that did not choose to investigate water quality have already completed and are implementing watershed plans under Chapter 400-12 WAC. The act requires planning units who are doing a water quality assessment to:

- examine existing studies on the water quality of the watershed, especially those related to the watershed's compliance with the State's Water Quality Standards
- examine existing studies on causes of pollution in the watershed, including point and nonpoint sources of pollution and the pollution carrying capacity of the various waterbodies in the watershed
- examine the characteristic uses of the water bodies in the watershed
- examine any total maximum daily load established under 33 USC 1313 (federal Clean Water Act) for a water body within the watershed
- recommend an approach for implementing any total maximum daily load requirements within the watershed in order to meet water quality planning
- recommend monitoring actions to see if water quality improvement has been sufficient to meet water quality standards
- identify and consider priorities for both long term and short term projects which will improve water quality in the watershed (RCW 90.82.090 and RCW 90.82.110).

Grants are provided to planning units to accomplish these tasks. A maximum of \$500,000 can be granted to each WRIA for planning purposes under this act. However, planning and implementation activities under 90.82 are voluntary.

In addition, the State's Salmon Recovery Act (Chapter 75.46 RCW) provides for a similar planning and implementation process, but is focused on improving fish habitat. RCW 36.70A.060 requires local governments, jointly with tribes, to identify stream project in watersheds requiring restoration, and section 070 of the act requires projects to be prioritized and a work schedule prepared.

In summary, this management measure is implemented by:

Management Measure Component	Statute
1 Identify pollution reduction opportunities	RCW 75.46.060, 070 RCW 90.82.090, 100, 110
2 Implementation schedule	RCW 75.46.070, RCW 90.82.110

Additional needs

None.

Actions to implement this management measure

Adequate measures exist to implement this management measure.

ON-SITE SEWAGE SYSTEMS

BACKGROUND

On-site sewage systems, known as septic systems, serve approximately 1.4 million people in the 39 Washington counties. Most of the administration of on-site septic system regulations and programs is conducted by the 32 local health jurisdictions of the State. However, local health departments do not have enough field staff to adequately monitor systems for failure. The statewide average is approximately one field staff for every 7,500 on-site systems. In support of local efforts, the State Department of Health provides minimum State rules and regulations, technical assistance, technical review of alternative technologies, training, program review, and general supervision. DOH recommends standards and guidance documents for alternative technologies and technical issues. The regulations governing on-site systems are Chapters 246-272 WAC, On-site Sewage Systems; Rules and Regulations and 173-216 WAC, State Wastewater Discharge Permit System.

The total number and density (number of systems per unit area) is increasing in counties undergoing urbanization. The fastest urbanization is presently occurring in Island, King, Kitsap, Pierce, Snohomish and Thurston counties. There are an estimated 450,000 on-site sewage systems in Puget Sound watersheds, with more than 10,000 added each year (1994 Puget Sound Water Quality Management Plan). This is nearly 80 percent of the total number of on-site systems in the State.

Many on-site systems were installed before State minimum standards were adopted (1974). Sanitary surveys reveal some common factors in on-site system failures. These include poor soils, obsolete design, poor construction, loose regulation, poor operation and maintenance, and limited knowledge on the part of local professionals and owner/operators. The recently revised State on-site system regulations deal with most of these factors.

Even with suitable soil conditions and proper installation, the conventional septic tank system creates some concern about potential impacts on human health and water quality. Statewide regulations call for competent professionals to certify soil capability and design technology.

Local health jurisdictions are responsible for permitting on-site systems if the flow does not exceed 3,500 gallons per day. The State Department of Health has jurisdiction over larger systems. The general practice in Washington has been to discourage the use of on-site systems to treat commercial wastewater or pre-treat to typical residential wastewater quality. There are concerns that this is not an appropriate treatment technology and potential pollutants such as organic compounds or metals are likely to pass through untreated. Wastewater rich in organics, such as fruit processing wastes, but with an inappropriate nutrient balance such as low nitrogen or phosphorus, is another area where on-site treatment needs to be carefully evaluated.

Many aspects of the revised statewide regulations were driven by earlier versions of the Puget Sound Plan. The 1994 Puget Sound Plan stresses the importance of good State oversight and local implementation. It also calls on local health departments to design and adopt programs to monitor on-site systems by January 2000, a requirement that mirrors similar provisions in the new regulations.

Within Puget Sound, the focus for on-site programs is to protect drinking water, recreational waters, shellfish growing waters, and to keep the public from being directly exposed to untreated sewage. Upon downgrade of a shellfish bed, the State works with local governments to develop and implement a shellfish closure response strategy, which includes identification and correction of failing on-site septic systems. The local jurisdiction must also create a shellfish protection district to implement long-term solutions to the problems, including on-site septic measures such as inspections, corrections, education, and operation and maintenance. Local watershed plans must include nonpoint pollution control strategies for addressing on-site septic systems, which can include voluntary, educational and regulatory programs.

NONPOINT POLLUTION ASSOCIATED WITH ON-SITE SEWAGE SYSTEMS

On-site Failure Rates. The exact number of failing systems is not known. Sanitary surveys suggest that failure frequency in Puget Sound ranges from five to 29 percent. In some isolated areas around Puget Sound, failure frequency has approached 100 percent. Failing systems pose a potential health hazard because domestic wastewater can contain bacteria, viruses, protozoa, and helminths (worms) harmful to people. Typhoid fever, gastrointestinal infections, and infectious hepatitis have been linked to failing on-site systems around the country. (Peterson, 1971)

Threat to Shellfish Resource. Shellfish production in Washington ranks among the highest in the country. Washington is first in oyster production. Clam beds in Skookum Inlet (south Puget Sound) are the nation's most productive. The State's shellfish industry generates 70 million wholesale dollars per year with considerable potential for expansion, particularly for income-poor rural coastal counties. In past years, the State Department of Health has downgraded nearly 40 percent of Puget Sound shellfish beds. Since 1981, 46,000 acres of shellfish beaches have been downgraded. But the tide may be turning. In 1998, five growing areas containing 5,400 acres were upgraded and only one area of 22 acres was downgraded. About 40 percent of recreational shellfish sites are still threatened. Failing on-site systems have been identified as a contributing factor in over 80 percent of the downgrades. (DOH Annual Shellfish Inventory, December 1998)

Ground Water Contamination Nitrate contamination of ground water has been detected throughout the state. Contamination has been traced to on-site systems and livestock operations. However, many other sources of nitrates have not been studied (e.g. domestic lawn fertilizers, agricultural fertilizers). Nitrate contributions from septic systems seem to stay below the threshold for ground water contamination when housing densities stay below 3.5 units per acre.

Nutrient Enrichment of Receiving Waters Studies throughout the state show seasonally high levels of inorganic nutrients. In addition to inorganics, the fjord character of several basins in Puget Sound (Hood Canal, South Puget Sound, Port Susan) makes the Sound particularly sensitive to organic loading. Lake Chelan and Lake Roosevelt, among others, are also sensitive to increased organic loading. Management measures include expensive alternative designs for septic systems and limiting housing density.

SOURCE CONTROL STRATEGY

There are two management measures for On-site Sewage Systems - New On-Site Sewage Systems, and Operating On-Site Sewage Systems.

The management measures for these subcategories are governed by the State's public health statutes (Title 70 RCW) and also implemented by local governments. However, key regulations and standards are established by the State, primarily by Ecology and Health.

On-site sewage system regulations fall under Chapter 70.118 RCW and Chapter 246-272 WAC. Although Chapter 246-272 WAC was developed by the State Department of Health, local health boards issue the permits and perform the inspections and other tasks associated with this regulation.

Many counties and agencies are involved with on-site education activities. Failing septic systems are a primary issue of concern for estuarine health. In response, the Padilla Bay staff developed a Septic Education Kit to serve as a "toolbox" with everything an educator would need for a complete on-site education program, posters, slide shows, flyers, videos, etc. In the spring of 1999, NOAA agreed to produce and distribute the Kit, so that it would be available on a national basis.

1998 FINDING FROM EPA AND NOAA

Finding:

Washington's program includes management measures in conformity with the 6217(g) guidance and enforceable policies and mechanisms to ensure implementation throughout the 6217 management area, except for a program that ensures inspection of onsite disposal systems (OSDS) at a frequency adequate to ascertain system failure and provides for denitrification where nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from new OSDS.

Condition:

Within two years, Washington will include in its program management measures in conformity with the 6217(g) guidance and enforceable policies and mechanisms to ensure implementation throughout the 6217 management area for a program that ensures inspection of OSDS at a frequency adequate to ascertain system failure and provides for denitrification where nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from new OSDS."

Rationale:

Washington has a regulatory program for OSDS, administered by the Department of Health, that is generally consistent with the OSDS management measures. The State, however, lacks requirements for the periodic inspections of operating OSDS outside of areas formally designated as areas of special concern. Nor does the State have provisions for the installation and upgrade of denitrifying OSDS adjacent to nitrogen-limited surface waters.

RESPONSE TO FINDINGS

Washington believes that it meets all management measure requirements for onsite sewage systems.

Management Measure Number VA: **New Onsite Sewage Systems**

Description from Federal Guidance

- (1) Ensure that new Onsite Disposal Systems (OSDS) are located, designed, installed, operated, inspected, and maintained to prevent the discharge of pollutants to the ground surface and, to the extent practicable, reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives: (a) discourage the installation of garbage disposals to reduce hydraulic and nutrient loadings; and (b) where low-volume plumbing fixtures have not been installed in new developments or redevelopments, reduce total hydraulic loadings to the OSDS by 25 percent. Inspect OSDS at pre-construction, during construction, and at post-construction.
- (2) Direct placement of OSDS away from unsuitable areas. Where OSDS placement in unsuitable areas is not practicable, ensure that the OSDS is designed or sited at a density so as not to adversely affect surface waters or ground water that is closely hydrologically connected to surface water. Unsuitable areas include, but are not limited to, areas with poorly or excessively drained soils; areas with shallow water tables or areas with high seasonal water tables; areas overlaying fractured bedrock that drain directly to ground water; areas within floodplains; or areas where nutrient and/or pathogen concentrations in the effluent cannot be sufficiently treated or reduced before the effluent reaches sensitive waterbodies.
- (3) Establish protective setbacks from surface waters, wetlands, and floodplains for conventional as well as alternative OSDS. The lateral setbacks should be based on soil type, slope, hydrologic factors, and type of OSDS. Where uniform protective setbacks cannot be achieved, site development with OSDS so as not to adversely affect water bodies and/or contribute to a public health nuisance.
- (4) Establish protective separation distances between OSDS system components and ground water which is closely hydrologically connected to surface waters. The separation distances should be based on soil type, distance to ground water, hydrologic factors, and type of OSDS.
- (5) Where conditions indicate that nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from ground water, require the installation of OSDS that reduce total nitrogen loadings by 50 percent to ground water that is closely hydrologically connected to surface water.

1998 Finding from EPA and NOAA

See general discussion of onsite sewage for findings.

Existing Statute(s) and Regulations

On-site Sewage Systems (Chapter 70.118 RCW)
Powers and Duties of State Board of Health (Chapter 43.20 RCW)
Local Boards of Health (Chapter 70.05 RCW)
Chapter 246-272 WAC (Department of Health)

Description of Current Programs in Washington

The Department of Health is authorized to promulgate minimum standards for the operation and maintenance of on-site sewage systems by regulation (RCW 43.20.050). Chapter 246-272 WAC contains these standards whose purpose is to minimize "public health effects of on-site sewage systems on surface and ground waters;" "establish design, installation, and management requirements for on-site sewage systems to accommodate long-term treatment and disposal of sewage;" and "establish minimum functional regulations for local boards of health choosing not to adopt local regulations." (WAC 246-272-050)

These regulations prohibit the discharge of sewage to surface waters and provide a permitting system for on-site sewage systems. Conditions for permits are set, requiring minimum land areas, setbacks, site characterizations, soil logs, slopes, minimum tank volumes and consideration of environmental effects, such as land use and growth potential. Circumstances are described which require connection to a public sewer system. On-site sewage system designers and installers must be certified by local boards of health. The Department of Health and local health officers establish the guidelines for certification. In addition, local health officers are authorized to inspect on-site systems under construction. Prior to construction, sites can be inspected as part of the permitting process.

Local boards of health are responsible to implement Chapter 246-272 WAC unless they promulgate more stringent regulations (RCW 70.118.050). Enforcement of rules related to onsite sewage systems is authorized in Chapter 70.05 RCW. In addition, local boards of health are required to:

"identify failing septic tank drainfield systems in the normal manner and will use reasonable effort to determine new failures." (RCW 70.118.030)

Local health districts perform routine inspection throughout their jurisdictions. For example, Thurston County sends a letter out to all owners of onsite sewage systems to remind them to pump their tanks. When the tank is pumped, the owner submits verification to the county. If verification is not received in a timely fashion, an inspector visits the site. In addition, a random selection of other sites are visited.

Washington currently has no program to manage de-nitrification of surface waters from discharges of on-site sewage systems, other than the prohibition of discharges found in WAC 246-272-060. Few surface waters in the state have demonstrated nitrate overload,

and nitrate is not a parameter governed under the State's Water Quality Standards for Surface Waters.

Almost all nitrification in the state is in agricultural areas and generally attributable to fertilizer use. Washington's agricultural community has consistently had very low use of nitrate fertilizers, except in some irrigated areas. The State intends to defer consideration of this program until the next update, which will occur in year five of this plan, or later if necessary, in order to focus on more prominent sources of nonpoint pollution. The chart on the second page of chapter 2 illustrated the lack of nitrogen-impaired waters (lowest bar) versus the more prominent nonpoint pollution problems of temperature and fecal contamination.

In a partnership between DOH, Washington On-Site Sewage Association, and WSU, the Northwest On-Site Wastewater Training Center was established for the purpose of promoting professional excellence, and to raise the industry's standards on designing and installing on-site sewage systems. Basic principles relating to on-site sewage systems are the same everywhere. However, site specific requirements differ. Classes at the center relate to the regulations, guidelines, and requirements in Washington State.

Additional needs

None

Actions to satisfy this management measure

Adequate programs exist to implement this management measure.

Additional Actions to improve water quality

Though programs exist to meet this management measure, the state plans to improve on current programs with the following actions:

- Identify and approve new technologies for on-site waste treatment. (Urb 13)
- Expand the use of MOAs between Ecology and local governments to address the needs for expansion of sewer services to areas of actual or projected high population density. (Urb 15)
- Build the capacity of Northwest On-site Wastewater Training Center (NOWTC) to deliver educational programs to improve operation and management of on-site sewage systems.
- Establish an effective statewide education program in cooperation with local health jurisdictions that will inform the general public utilizing on-site sewage disposal of the importance of properly maintaining their systems and how to do that. (Urb 14)

Management Measure Number VB: Operating On-Site Sewage Systems

Description from Federal Guidance

- (1) Establish and implement policies and systems to ensure that existing OSDS are operated and maintained to prevent the discharge of pollutants to the surface of the ground and, to the extent practicable, reduce the discharge of pollutants into ground waters that are closely hydrologically connected to surface waters. Where necessary to meet these objectives, encourage the reduced use of garbage disposals, encourage the use of low-volume plumbing fixtures, and reduce total phosphorus loadings to the OSDS by 15 percent (if the use of low-level phosphate detergents has not been required or widely adopted by OSDS users). Establish and implement policies that require an OSDS to be repaired, replaced, or modified where the OSDS fails, or threatens or impairs surface waters.
- (2) Inspect OSDS at a frequency adequate to ascertain whether OSDS are failing.
- (3) Consider replacing or upgrading OSDS to treat influent so that total nitrogen loadings in the effluent are reduced by 50 percent. This provision applies only:
 - where conditions indicate that nitrogen-limited surface waters may be adversely affected by significant ground water nitrogen loadings from OSDS, and
 - where nitrogen loadings from OSDS are delivered to ground water that is closely hydrologically connected to surface water.

1998 Finding from EPA and NOAA

See general discussion of onsite sewage for findings.

Existing Statute(s) and Regulations

Local Boards of Health (Chapter 70.07 RCW)
Biosolids (Chapter 70.95J RCW)
Phosphorus in Detergents (Chapter 70.95L RCW)
Onsite Sewage Systems (Chapter 70.118 RCW)
Water Pollution Control Act (Chapter 90.48 RCW)

Description of Current Programs in Washington

The responsibility of the local board of health is to:

1. “Enforce through the local health officer or the administrative officer..., if any, the public health statutes of the state and rules promulgated by the state board of health and the secretary of health;
2. Supervise the maintenance of all health and sanitary measures for the protection of the public health within its jurisdiction;

3. Enact such local rules and regulations as are necessary in order to preserve, promote and improve the public health and provide for the enforcement thereof;
4. Provide for the control and prevention of any dangerous, contagious or infectious disease within the jurisdiction of the local health department;
5. Provide for the prevention, control and abatement of nuisances detrimental to the public health;" (RCW 70.07.060)

As is typical for government agencies, local boards of health base their enforcement work on routine inspections. The "public health statutes" referenced in subsection (1) are the laws in Title 70 RCW, with some exceptions, and include the on-site sewage law, Chapter 70.118 RCW. "Rules promulgated by the state board of health" are found in Title 246 WAC and include Chapter 246-272, onsite sewage.

In addition, local health boards have the specific requirement to:

"identify failing septic tank drainfield systems in the normal manner and will use reasonable effort to determine new failures." (RCW 70.118.030)

"The normal manner" implies the use of routine inspections. Where needed, inspections are targeted to areas where there has been pollution in commercial or recreational shellfish beds or freshwater.

Loadings from onsite sewage systems have been ameliorated by restrictions at the retail level:

- Chapter 70.118 RCW prohibits the use of chemical additives in onsite sewage systems unless certified by the state Department of Health
- Chapter 70.95L bans the retail sale of laundry detergents which contain 0.5 percent or more phosphorus by weight and dishwashing detergents which contain 8.7 percent or more phosphorus by weight

For a discussion of de-nitrification, see previous management measure.

An increasing number of counties and boards of health have begun using State Revolving Fund loans and local sewer rates to provide low-interest loans to homeowners to upgrade or repair malfunctioning on-site sewer systems. This new initiative is helping many small communities deal with difficult and expensive on-site problems.

Additional needs

None

Actions to satisfy this management measure

Adequate programs exist to implement this management measure.

Additional Actions to improve water quality

The state will enhance current programs by:

- Seeking additional legal and financial assistance for local health officers' inspections of onsite sewage systems (Urb 12)
- Identifying needs to enhance the on-site Operation and Maintenance program at both the state and local levels, recommending funding program to implement. (Urb 11)

POLLUTION PREVENTION

BACKGROUND

Many other land uses contribute to nonpoint pollution and the impairment of Washington's water bodies. Some of these include misuse of pesticides and fertilizers, household hazardous wastes, landfills, underground storage tanks, waste oil, tires, batteries, etc. They are all associated with human activity and require human involvement to solve the problem. The actual quantities of pollutants generated through these sources are unknown, given the manner in which these pollutants are generated. However, it is suspected that the relative contribution is substantial. This section will be a brief discussion of these sources and the types of pollutants generated.

Pesticides and Fertilizers. In Washington, most pesticides and fertilizers are used by the agricultural industry. However, a substantial amount of both is used by county road departments, golf courses, households, forest practices, and other uses. Since there is a wide variety of pesticides and fertilizer uses, it is difficult to identify and quantify their transport to receiving waters.

Landfills. Landfills, particularly older unlined sites, present a considerable threat to both surface and ground water quality. Washington has approximately 100 landfills with permits, and an estimated 100 non-permitted landfills larger than 1/2 acre. The number of landfills smaller than 1/2 acre is unknown.

Household Hazardous Wastes. A variety of chemicals is used in households, such as cleaners, pesticides, paints, and solvents. Some of these are toxic and may be introduced into the environment by different routes -- disposal into a municipal sewage treatment system, disposal into an on-site septic system, disposal into storm drains or on the ground, and landfill disposal.

Underground Storage Tanks. Underground storage tanks present a significant threat to surface and ground water statewide. Of the 33,000 or more commercial and industrial underground storage tanks in Washington, an estimated 10 percent may be leaking. Approximately two-thirds of all tanks are located in western Washington. Approximately 40 percent of all tanks are more than 15 years old. Nearly 80 percent are bare steel with no erosion protection.

Waste Oil, Tires, Batteries, and Abandoned Vehicles. These waste stream materials threaten both surface and ground water quality, since they are frequently disposed of inappropriately in landfills as well as by indiscriminate dumping.

Hazardous Materials. In Washington, the use of hazardous materials is regulated by both the federal Resource Conservation and Recovery Act of 1976 (RCRA) and the Clean Water Act (CWA). RCRA defines wastes as hazardous if they possess certain characteristics or if they have been specifically listed by EPA. Listed wastes may contain one or more of 375 hazardous constituents.

NONPOINT POLLUTION ASSOCIATED WITH THESE ACTIVITIES

Sources of water quality pollution in this category can be the most difficult to solve, given both the range of pollutants and the diversity of sources.

The principle concern regarding the effect of pesticides upon receiving waters is the extent to which pesticides biodegrade, bioaccumulate, or biomagnify. Some pesticides biodegrade readily. Others do not. The toxic effects of pesticides include a wide variety of responses to all organisms, including reduced growth of a species, liver dysfunction, kidney failure, cancer, or outright death.

Fertilizers can have a detrimental effect upon the receiving waters. Nitrogen and phosphorus are major fertilizer nutrients which result in high demands of biological oxygen (BOD) and excessive plant growth.

Under RCRA, hazardous waste management has been characterized as “cradle to the grave” waste management. A firm generating waste is required to determine if such waste is hazardous, and if so, must notify EPA. If the firm chooses to move the waste off-site for treatment or disposal, a paper trail must be maintained by the firm, transporter, and the receiving treatment, storage, or disposal facility. In contrast to RCRA, the national pretreatment standards under the CWA have a different charge--the control of industrial wastewater discharges to the local treatment facility.

There are several differences between the two regulatory programs.

- CWA protects the nation’s water by regulating toxic pollutants in wastewater and sludge; RCRA focuses on hazardous wastes in all environmental media.
- CWA primarily regulates 126 toxic pollutants (known as priority pollutants); RCRA regulates 375 hazardous wastes.
- CWA relies heavily on states and local municipalities to build treatment facilities, inspect, and enforce regulations; in RCRA, the federal government retains a much greater role.
- CWA requires the application of all known and available means of treatment. Under RCRA, an operator is given choices with conditions in the management of hazardous wastes.

In spite of the regulatory programs of both RCRA and CWA, nonpoint pollution associated with hazardous materials is extremely difficult to manage, maybe more than any other nonpoint source pollution. The range of sources generating and using hazardous materials is large, encompassing nearly every facet of commercial and private life. Manufacturing and non-manufacturing processes, agricultural chemical use, use and disposal of consumer products, transportation, indoor and outdoor burning, small businesses, and homes all contribute to the release of hazardous wastes. Solvents, oils, paints, metals, and pesticides are some of the hazardous materials found in Washington waters.

SOURCE CONTROL STRATEGY

Pollution prevention is the major focus of the approximately 20 laws governing waste management in the state. In addition, programs and projects related to waste management can be funded through the Local Toxics Control Account. Revenues for this account are derived from the Hazardous Substance Tax in Chapter 88.21 RCW. Since 1992, Ecology has granted over \$80 million to local governments for waste management.

Discharges are prohibited both on land, under Chapters 70.93 and 70.95 et seq RCW, and water, under Chapter 90.48 RCW. Primary enforcement for land discharges is by local health boards. Ecology funds these enforcement positions at the rate of \$100,000 for single county health boards and \$150,000 for multi-county health boards per biennium.

1998 Findings from EPA and NOAA

Findings:

Washington's program includes management measures in conformity with the 6217(g) guidance for pollution prevention.

Rationale:

The State's program submittal describes various programs and laws that address the management measure, especially for the Puget Sound planning area. EPA and NOAA encourage the State to continue efforts toward pollution prevention including in commercial areas.

Management Measure Number VI: **Pollution Prevention**

Description from Federal Guidance

Implement pollution prevention and education programs to reduce nonpoint source pollutants generated from the following activities, where applicable:

- (1) The improper storage, use, and disposal of household hazardous chemicals, including automobile fluids, pesticides, paints, solvents, etc.;
- (2) Lawn and garden activities, including the application and disposal of lawn and garden care products, and the improper disposal of leaves and yard trimmings;
- (3) Turf management on golf courses, parks, and recreational areas;
- (4) Improper operation and maintenance of onsite disposal systems;
- (5) Discharge of pollutants into storm drains including floatables, waste oil, and litter;
- (6) Commercial activities including parking lots, gas stations, and other entities not under NPDES purview; and
- (7) Improper disposal of pet excrement.

1998 Findings from EPA and NOAA

“Washington’s program includes management measures in conformity with the 6217(g) guidance for pollution prevention. The State’s program submittal describes various programs and laws that address the management measure, especially for the Puget Sound planning area. EPA and NOAA encourage the State to continue efforts toward pollution prevention including commercial areas.”

Existing Statute(s) and Regulations

Model Litter Control Act (Chapter 70.93 RCW)
Solid Waste Management--Reduction and Recycling--Act (Chapter 70.95 RCW)
Used Oil Recycling Act (Chapter 70.95I RCW)
Hazardous Waste Management Act (Chapter 70.105 RCW)
Model Toxics Control Act (Chapter 173-340 WAC)
Local ordinances

Description of Current Programs in Washington

Activities regarding pollution prevention are generally governed through the waste management acts found in title 70 of the RCW. Primary responsibility for solid waste rests with local governments as well as household and small-business hazardous waste. The primary responsibility for industrial hazardous waste rests with Ecology. About a decade ago or more, the State’s waste management laws were amended to focus on pollution prevention as the primary method for waste management, producing one of the nation’s leading waste management systems. For example, in 1996, in Washington State:

- 3900 tons of hazardous waste from households was collected at the State's 43 permanent facilities in 90 collection events.
- From these 3900 tons of waste, 1600 tons were recycled and over 1600 additional tons were used for energy recovery.
- 4400 tons of used oil were collected in 570 facilities across the State, and either recycled or used for energy recovery.
- 250 tons of hazardous waste were collected from small businesses.
- The Department of Agriculture Wasted Pesticide Disposal Program has collected more than 940,000 pounds of unusable pesticides since 1988. The Waste program also has educated thousands of pesticide users about waste pesticide minimization over the last 11 years.
- 39 percent of all solid waste in the State was recycled, including 192 tons of yard waste.
- More than one-third of Washington cities offered curbside recycling to their residents.

In addition, many local governments have created innovative programs to further encourage pollution prevention. Creative local programs like Bellevue's "Business Partners" and King County's "EnviroStars" enlighten unwitting polluters, giving technical advice on targeted BMPs to protect water quality. Both these programs are focused on small businesses.

Environmental education programs occur in schools across the state. Volunteer monitoring increases awareness and motivates environmental stewardship at the neighborhood level. Programs such as Water Watchers, Master Gardeners, and Master Watershed Stewards further enhance grassroots efforts in pollution prevention and environmental stewardship. Many larger cities have addressed the proper disposal of pet excrement in their animal control ordinances.

Disposal of waste is prohibited both on the ground and in the waters, including storm drains. Many agencies, both state and local, have authority to enforce these provisions. These laws are discussed in detail in Chapter 3.

Additional needs to meet this management measure

None

Actions to satisfy this management measure

Adequate programs exist to implement this management measure.

Additional Actions to improve water quality

- Fund and implement a program similar to the H₂O Home to Ocean program currently in operation in California, which educates the public about wise use and proper disposal of pesticides. (Ed 3)
- Through the Urban Pesticide Initiative, encourage the development and implementation of programs to reduce the use of pesticides in urban areas. (Urb 18)
- Increase capacity within the State to re-refine used motor oil. (Urb 19)
- Develop and implement a water restoration template for use in watershed plans under chapter 90.82 RCW (Urb23)
- Provide technical assistance to local governments in reducing use of pesticides in high density urban areas. (Urb24)
- Implement spill prevention and response, hazardous waste and contaminated sediments programs to eliminate or reduce risks and impacts on aquatic systems (Urb25)
- Through the Urban Pesticide Initiative, encourage the development and implementation of programs to reduce the use of pesticides in urban areas.(Urb26)
- For abandoned vehicles and illegal dumping, encourage tougher penalties and increased enforcement. Identify special days for free or reduced-fee disposal (Urb27)
- Develop local ordinances to ensure proper disposal of pet and domestic animal wastes (Urb 28)
- Increase capacity within the state to re-refine motor oil. (Urb 29)

Land Transportation Systems

BACKGROUND

Transportation relies on vehicles with internal combustion engines which introduce many contaminants into the biosphere. Transportation is regulated by a number of different agencies: The federal Department of Transportation, Washington State Department of Transportation, and the US EPA, which regulates emissions from all internal combustion engines. Otherwise, counties and cities establish the level of service for urban and rural area transportation management measures. Air pollution comes primarily from vehicles in the form of carbon monoxide, nitrous oxides, particulates, lead, and trace toxins. Rainfall can dissolve these pollutants from the air and turn them into water pollutants. In addition, petroleum products and other substances dropped on the roadway are carried by runoff into the State's waters.

As of 1994, almost 80,000 miles of road in Washington carried 5.2 million vehicles. The Puget Sound area represents the majority of roads and cars. Other larger cities in Washington -- Spokane, Vancouver, and Yakima, for example -- all experience contamination from impervious surfaces, but none so much as the Puget Sound. Roads are divided among the following classifications/ownership:

Table 5.3
Road Ownership in Washington

Classification/Owner	Miles
Federal	6,990
Interstate	764
Arterials/Collectors	6,272
Other State Roads	11,887
County Roads	41,424
City Streets	12,465
Total	79,802

For perspective, that means that each square mile of the State has approximately 1.2 miles of public road running through it. Note: this does not include forest roads regulated under the Forest Practices Act.

NONPOINT POLLUTION ASSOCIATED WITH TRANSPORTATION

Many vehicles routinely leak gasoline, oil, grease, transmission fluid, radiator fluids, etc. People dispose of contaminants along the road. Gasoline, oil and other fluids spilled onto the soil will be washed by rainfall into adjacent surface waters or end up in ground water supplies. They can also be accidentally released into waterways by oil spills and construction activity. These chemicals, most or all of which are toxic, can make this

water undrinkable, kill fish or other wildlife, and poison nearby plant life--destroying or impairing habitat. Such toxics are expensive to remediate.

Grit from the road acts like sediment, clogging streams and suffocating fish breeding areas. Nitrous oxide emissions from cars and airplanes combine with rainfall and contribute to acidification of lakes and streams.

SOURCE CONTROL STRATEGY

The construction and maintenance of roads, highways, and bridges are the joint responsibility of the State Department of Transportation (WDOT), county road departments, and cities. WDOT manages the interstate highways and access points and State highways. Counties manage county roads and cities, city streets.

Table 5.4
Road Mileage and Usage in Washington State, 1996

Road Type	Road Miles	% of total	Vehicle Miles Traveled (billions)	% of total
Federal	6,617	9.78	Not available	Not available
Interstate	764	.11	13,365	27.43
State Highways	6,274	9.27	14,185	29.11
County Roads	41,094	60.74	8,900	18.27
City Streets	12,910	19.08	12,272	25.19
Total	67,659		48,270	

Most of the state's roads are under county jurisdiction (61percent), but the most usage occurs on roads maintained by the State (57 percent). Roads need maintenance because of natural disasters, freezing and thawing, snow and ice removal, and use. In the year 2000, it is estimated that over \$200 million will be needed to maintain just the State and interstate highways.

For purposes of this analysis, we have referred to the urban stormwater subcategory. Construction and siting of roads, highways, and bridges are governed by the same statutes, regulations and permits as any other construction or development activity. Bridges are also considered substantial shoreline developments.

Like urban construction, road construction and maintenance projects with environmental impacts are subject to the Construction General Permit. All road projects are subject to review under the State Environmental Policy Act (Chapter 43.21C RCW), which requires them to:

- prepare and implement an Erosion and Sediment Control (ESC) Plan
- prepare and implement a Spill Prevention and Emergency Cleanup Plan.

The purpose of the ESC plan is to use BMPs to prevent erosion at the site and sediment delivery to the State's waters. An ESC plan must ensure that:

- exposed and un-worked soils are stabilized in a timely manner
- existing vegetation is preserved where possible
- cut and fill slopes are designed to minimize erosion
- stabilization is adequate to prevent erosion of streams and drainages
- sediment delivery to road surfaces is minimized
- stormwater passes through a retention pond or equivalent BMP
- downstream properties and waterways are protected from impacts of construction
- regular inspections, maintenance, and repair of stormwater management are performed.

In addition, bridges are required to obtain a permit under the Shoreline Management Act (Chapter 90.58 RCW).

The Puget Sound Plan calls for the Washington State Department of Transportation to carry out a program to control runoff from freeways and highways within watersheds. This program is to be consistent with Ecology's Puget Sound Highway runoff rule.

1998 FINDINGS FROM EPA AND NOAA

Findings:

For roads, highways and bridges in the Puget Sound planning area under State jurisdiction, Washington's program includes management measures in conformity with the 6217(g) guidance, and enforceable policies and mechanisms. For roads, highways and bridges not under State jurisdiction and for State roads, highways and bridges outside of the Puget Sound planning area, Washington's program does not include management measures in conformity with the 6217(g) guidance. For local roads, highways and bridges within the Puget Sound planning area and for all roads, highways and bridges outside of the Puget Sound planning area, the State has identified a backup enforceable authority but has not yet demonstrated the ability of the authority to ensure implementation throughout the 6217 management area.

Condition:

Within three years, the State will include in its program management measures for roads, highways and bridges outside of the Puget Sound planning area and for those not under State jurisdiction within the planning area. Within one year, the State will develop a strategy (in accordance with Section XIII, page 14) to implement these management measures throughout the 6217 management area.

Rationale:

For roads, highways and bridges under State jurisdiction in the Puget Sound planning area, Chapter 173-270 of the Washington Administrative Code (WAC) requires the Department of Transportation to develop and adopt a highway manual to manage storm

water for existing and new facilities and rights of way in the Puget Sound basin. This manual meets or exceeds the 6217 (g) management measures.

Outside of the Puget Sound Basin, however, Washington relies on the same policies, programs and laws for the Urban management measures IIA - IIB. The shortcomings of these policies, programs and laws are discussed above in Section IV. A.

EFFORTS TO IMPROVE LAND TRANSPORTATION SYSTEMS IN WASHINGTON

The categories for Land Transportation Systems are:

1. Planning, Siting, and Developing Roads and Highways
2. Site, Design, and Maintain Bridges
3. Road, Highway and Bridge Construction Project Erosion and Sediment Control
4. Road, Highway, and Bridge Construction Site Chemical Control
5. Roads, Highways, and Bridges Operation and Maintenance
6. Roads, Highways, and Bridges Runoff Systems

For purposes of this analysis, please refer to the Urban Areas subcategory called Construction and Development (stormwater runoff). Most of the programs to control nonpoint pollution are the same for this section on Land Transportation Systems.

At this time, Washington does not have adequate programs to meet the above listed management measures. Future development of this aspect of the state's nonpoint source control program is linked to the adoption of the new statewide stormwater manual. This manual is currently out for public review, with adoption planned for the summer of 2000. The actions below will also address endangered species and water quality.

Salmon Recovery Plan

One of the key aspects to the Salmon Recovery Plan is controlling stormwater. Land transportation systems are a significant source of water quality problems. Changes in flow regime and culvert construction have destroyed habitat or limited its availability.

The following Salmon Plan early actions are designed to address transportation problems in the next two years:

- Complete the 20-year Washington Transportation Plan to include environmental sustainability.
- Completely reinvent NEPA pilot projects earlier into project planning to address environmental concerns on a broad geographic area.
- Revise and implement highway runoff manual; undertake stormwater retrofit for transportation projects; implement grant programs.

- Develop and implement a compliance accountability database to track WSDOT permit requirements and mitigation activities.

Other general actions to improve land transportation systems

- Provide road maintenance guidelines to local communities
- Evaluate new ways to improve compliance on DOT construction projects

Management Measure Number VIIA: **Planning, Siting, and Developing Roads and Highways**

Description from Federal Guidance

Plan, site, and develop roads and highways to:

1. Protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss;
2. Limit land disturbance such as clearing and grading and cut and fill to reduce erosion and sediment loss; and
3. Limit disturbance of natural drainage features and vegetation.

1998 Findings from EPA and NOAA

General findings for Roads, Highways and Bridges can be found in the general discussion of Land Transportation Systems.

Existing Statute(s) and Regulations

State Environmental Policy Act (Chapter 43.21C RCW)

Chapter 197-11 WAC

Water Pollution Control Act (Chapter 90.48 RCW)

Puget Sound Highway Runoff Program

Chapter 173-270 WAC

Description of Current Programs in Washington

This management measure is implemented by the same programs as Urban Management Measure IIC: Site Development. Please refer to that description for the required information. In addition, the requirements of this management measure are addressed through parts B1 and B3 - Environmental Elements (Earth and Water) of the SEPA Checklist found in the preceding Urban category introduction.

Road construction is governed as any other construction activity and falls under the requirements of the state's Construction General Permit and the 1992 Puget Sound Highway Runoff Manual. Though this manual was designed for implementation in Puget Sound counties to meet the requirements of the Puget Sound Water Quality Action Plan, the manual was used widely across the state for other road construction permits.

Ecology enforces water quality through the broad provisions of RCW 90.48.080 and the water quality standards Chapter 173-201A.

Additional needs to meet this management measure

There is a need for a statewide stormwater manual.

Actions needed to implement this management measure:

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development.

Additional Actions to Improve Water Quality

- Revise and implement highway runoff manual; undertake stormwater retrofit for transportation projects; implement grant programs.

Management Measure Number VIIIB: **Siting, Designing, and Maintaining Bridges**

Description from Federal Guidance

Site, design, and maintain bridge structures so that sensitive and valuable aquatic ecosystems and areas providing important water quality benefits are protected from adverse effects. Bridges should be sited to cross watercourses over a straight reach and should avoid crossings over river meanders. Bridges should also be designed to keep the existing flow conveyance, to utilize the zero rise water surface elevations, to place piers and other flow obstructions out of the floodway, and to avoid adverse downstream and upstream channel degradation due to the change in hydraulics.

1998 Finding from EPA and NOAA

General findings for Roads, Highways and Bridges can be found in the general discussion of Land Transportation Systems.

Existing Statute(s) and Regulations

Shoreline Management Act (Chapter 90.58 RCW)

Hydraulic Code (Chapter 75.20 RCW)

Construction Projects in State Waters (Chapter 220-110 RCW)

Public Lands Act (Chapter 79.01 RCW)

Description of Current Programs in Washington

Under the Shoreline Management Act, all bridges are required to obtain a permit prior to construction. Ecology reviews the siting and design of bridges and conditions the permit to protect the shoreline and adjacent water ecosystems. Permit conditions for bridges implement this management measure.

A hydraulic permit is also required if any bridge support or structure is placed in the water, as is the case with most bridges. The Department of Fish and Wildlife issues the permit and may condition it to protect fish spawning and rearing habitat, a beneficial use of many of Washington's waters. Ecology and Fish and Wildlife both have the authority to deny permits if adverse environmental effects will be caused by the project.

A lease from the Department of Natural Resources is required for the use of the aquatic lands that will support bridge. Generally, DNR will include the conditions of the shoreline and hydraulic permit as terms of the lease.

For substantial construction or maintenance activities of, Ecology may require a short-term water quality modification.

A detailed discussion of the interaction of the three laws that manage development of the state's shorelines and near-shore areas is found in Chapter 3, "A Summary of Laws Governing Nonpoint Pollution in Washington State."

Additional needs to meet this management measure

There is a need for a statewide stormwater manual.

Actions needed to implement this management measure:

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development.

Additional Actions to Improve Water Quality

- Revise and implement highway runoff manual; undertake stormwater retrofit for transportation projects; implement grant programs.

Management Measure Number VIIC: **Road, Highway and Bridge Construction Project Erosion and Sediment Control**

Description from Federal Guidance

- (1) Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction.
- (2) Prior to land disturbance, prepare and implement an approved erosion control plan or similar administrative document that contains erosion and sediment control provisions.

1998 Finding from EPA and NOAA

General findings for Roads, Highways and Bridges can be found in the general discussion of Land Transportation Systems.

Existing Statute(s) and Regulations

State Environmental Policy Act (Chapter 43.21C RCW)
Chapter 197-11 WAC SEPA Rules
Water Pollution Control Act (Chapter 90.48 RCW)
Chapter 173-200A WAC Standards for Surface Water Quality
Puget Sound Highway Runoff Program
Chapter 173-270 WAC

Description of Current Programs in Washington

This management measure is implemented by the same programs as Urban Management Measure IIIA: Construction Site Erosion and Sediment Control. Please refer to that description for the required information.

Road construction is governed as any other construction activity and falls under the requirements of the state's Construction General Permit and the stormwater manual. The State Environmental Policy Act provides some measures to prevent sediment discharge in construction. All activities which require action by a government body, such as the issuance of a permit, must submit a SEPA checklist to the affected government and Ecology. This includes projects too small to be covered by the Construction General Permit, except the construction of a single-family dwelling.

The checklist must also have a period for public review and comment. If an adverse effect to the environment is noted, such as a possible sediment discharge during construction, an environmental impact statement must be prepared and the subsequent permit may be issued with conditions related to erosion control and sediment retention. The requirements of this management measure are addressed through part B1 -

Environmental Elements (Earth) of the SEPA Checklist found in the preceding Urban category introduction.

RCW 90.48.020 prohibits the discharge of any material that would alter the physical, biological or chemical characteristics of a water body. Sedimentation, which introduces turbidity, is considered a violation of RCW 90.48.020. Many local governments have also enacted sediment control ordinances, with penalties. Both Chapter 90.48 and local ordinances allow for civil penalties. In addition, as previously noted, local governments can issue stop work orders.

WSDOT is preparing a stormwater manual and other related guidance for use statewide. County Roads Administration Board (CRAB) is looking at ways to provide assistance to other government entities such as small towns that are currently not clients.

Additional needs to meet this management measure

There is a need for a statewide stormwater manual

Actions needed to implement this management measure:

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development

Additional Actions to Improve Water Quality

- Revise and implement highway runoff manual; undertake stormwater retrofit for transportation projects; implement grant programs

Management Measure Number VIID: **Road, Highway and Bridge Construction Site Chemical Control**

Description from Federal Guidance

- (1) Limit the application, generation, and migration of toxic substances;
- (2) Ensure the proper storage and disposal of toxic materials; and
- (3) Apply nutrients at rates necessary to establish and maintain vegetation without causing significant nutrient runoff to surface water.

1998 Finding from EPA and NOAA

General findings for Roads, Highways and Bridges can be found in the general discussion of Land Transportation Systems.

Existing Statute(s) and Regulations

Hazardous Waste Management Act (Chapter 70.105 RCW)
Chapter 173-303 WAC, Dangerous Waste Regulations
Water Pollution Control Act (Chapter 90.48 RCW)
Model Toxics Control Act (Chapter 173-240 WAC)
Puget Sound Highway Runoff Program
Chapter 173-270 WAC

Description of Current Programs in Washington

Road construction is governed as any other construction activity and falls under the requirements of the state's Construction General Permit and the stormwater manual.

This management measure is implemented by the same programs as Urban Management Measure IIIB: Construction Site Chemical Control. Please refer to that description for the required information.

Additional needs to meet this management measure

There is a need for a statewide stormwater manual.

Actions needed to implement this management measure:

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development

Additional Actions to Improve Water Quality

- Revise and implement highway runoff manual; undertake stormwater retrofit for transportation projects; implement grant programs

Management Measure Number VIII: **Roads, Highways and Bridges Operation and Maintenance**

Description from Federal Guidance

Traction materials applied to roadways are ground into fine particles by traffic after snow melt. In some areas, this can be a large source of airborne particulate matter on spring days. Harder traction material, lower application rates, de-icing chemicals, and other methods can be used to lower emissions, and can run off into waterways and waterbodies.

Incorporate pollution prevention procedures in the operation and maintenance of roads, highways and bridges to reduce pollutant loadings to surface waters.

1998 Finding from EPA and NOAA

General findings for Roads, Highways and Bridges can be found in the general discussion of Land Transportation Systems.

Existing Statute(s) and Regulations

Water Pollution Control Act (Chapter 90.48 RCW)
Chapter 173-200A WAC Standards for Surface Water Quality
Puget Sound Water Quality Act (Chapter 90.71 RCW)
Chapter 173-200, Puget Sound Highway Manual
Puget Sound Highway Runoff Program
Chapter 173-270 WAC

Description of Current Programs in Washington:

Counties receive technical assistance from the County Roads Administration Board. CRAB has up-to-date information on latest technology on road construction and maintenance issues.

The Department of Transportation has a state of the art manual on road maintenance designed to address both water quality and fish needs. This manual will likely become the standard by which road surfaces will be managed in Washington and will be made available to local governments for adoption.

Additional needs to meet this management measure

There is a need for a statewide stormwater manual.

Actions needed to implement this management measure:

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development
- Cities and towns do not receive the services provided to counties by CRAB.

Additional Actions to Improve Water Quality

- Revise and implement highway runoff manual; undertake stormwater retrofit for transportation projects; implement grant programs
- Provide road maintenance guidelines to cities and towns.

Management Measure Number VIIF: **Roads, Highways, and Bridges Runoff Systems**

Description from Federal Guidance

Develop and implement runoff management systems for existing roads, highways, and bridges to reduce runoff pollutant concentrations and volumes entering surface waters.

- (1) Identify priority and watershed pollutant reduction opportunities (e.g., improvements to existing urban runoff control structures); and
- (2) Establish schedules for implementing appropriate controls.

1998 Finding from EPA and NOAA

General findings for Roads, Highways and Bridges can be found in the general discussion of Land Transportation Systems.

Existing Statute(s) and Regulations

Salmon Recovery Act (Chapter 75.46 RCW)
Watershed Planning Act (Chapter 90.82 RCW)
Puget Sound Water Quality Act (Chapter 90.71 RCW)
 Chapter 400-12 WAC, Nonpoint Pollution
Puget Sound Highway Runoff Program
 Chapter 173-270 WAC
Water Pollution Control Act (Chapter 90.48 RCW)
 Chapter 173-200A, Water Quality Standards for Surface Waters

Description of Current Programs in Washington

Road construction is governed as any other construction activity and falls under the requirements of the state's Construction General Permit and the stormwater manual.

This management measure is implemented by the same programs as Urban Management Measure IVA: Existing Development. Please refer to that description for the required information.

Additional needs to meet this management measure

There is a need for a statewide stormwater manual.

Actions needed to implement this management measure:

- Develop a Stormwater Management Strategy which includes updating the stormwater manual and helping local governments implement the manual to address stormwater impacts on habitat and water quality of new development

Additional Actions to Improve Water Quality

- Revise and implement highway runoff manual; undertake stormwater retrofit for transportation projects; implement grant programs